4.8 Evaluation Matrix

A brief evaluation matrix is shown below, comparing the various structure types:

Table 4.1 – Alternatives Evaluation Matrix

Performance/ Evaluation Factors	Alternative 1 Large Diameter Drilled Shafts	Alternative 2 Soil-Cement Secant Piles	Alternative 3 Jacked - Precast Box or Bridge Structure	Alternative 4 Concrete Structure w/Shoofly	Other Concepts Considered and Eliminated	
					Precast Box or Bridge Structure	Bridge over Railroad Tracks
Impacts to JPB	Nighttime closures and temporary track removal needed during construction. E.g. single tracking.	Nighttime closures and temporary track removal needed during construction E.g. single tracking.	No track removal. Tracks may be affected by jacking operation. E.g. single tracking.	Requires track shoofly designed to their standards for mainline tracks.	Requires track removal for long duration during construction E.g. single tracking.	Minimal track disruption during construction
Construction Cost	Moderate	Moderate	Expensive	Expensive	Least expensive, if access available	Most Expensive
Construction Schedule	Long, due to numerous special windows for operations affecting trackwork.	Long, due to numerous special windows for operations affecting trackwork.	Potentially shortest, if concept determined to be feasible	Potentially shortest. Shoofly permits rapid construction of structure with less shoring	Shortest	Longest, depending on bridge superstructure type
Aesthetics	Exposed drilled shaft can be used as architectural feature	Rectangular shape allows for flexibility in applying Architectural treatments	Rectangular shape allows for flexibility in applying Architectural treatments	Rectangular shape allows for flexibility in applying Architectural treatments	Rectangular shape allows for flexibility in applying Architectural treatments	Could be a signature structure or landmark feature
Impact on Adjacent Streets during Construction	Tight construction access along Evelyn Avenue	Tight construction access along Evelyn Avenue	Major impact on Central Expressway during construction	Provides substantially more room for construction operations on the Evelyn Avenue side of the project.	Requires crane access from Central Expressway	Not assessed
Utility Impacts	Tunnel positioned to avoid most utilities	Tunnel positioned to avoid most utilities	Utilities could be damaged by the box jacking operation.	Fiber optic ductbank underneath the shoofly needs relocation.	Utilities conflicting with shoring and final structure must be relocated or protected in place.	Utilities under bridge footings must be cleared
Advantages	Moderate construction & maintenance cost.	Shoring method is preferred by JPB.	Fewest special construction windows required.	Excellent work access with tracks moved out of the way.	Low construction & maintenance costs	Minimal disruption to rail operations during construction
Disadvantages	Specialty contractor may be needed for drilled shaft construction. More joints that need sealing to prevent moisture intrusion. Needs numerous track closures, single tracking opportunities.	Needs numerous track closures, single tracking opportunities.	Only a limited number of contractors are experienced with this type of operation Large pit protrudes into Central Expressway (More suited for embankment)	Requires track shoofly. Expensive.	Requires track removal for long duration during construction	Most Expensive Poor pedestrian/bike flow
Summary	Proven construction method (Evelyn Avenue LRT Underpass)	Proven construction method (Lawrence Station Underpass)	Possible VE approach by contractor.	Proven construction method. JPB prefers, but most expensive	Feasible in combination with Alternatives 3 and 4	Substantially more expensive, not considered in this study